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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/751,301      | 01/02/2004  | David M. Giorgi      | 00970.0011-US-U1    | 8801             |

22865 7590 11/13/2006  
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EXAMINER

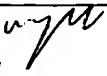
VAN ROY, TOD THOMAS

ART UNIT PAPER NUMBER

2828

DATE MAILED: 11/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |   |                               |  |
|------------------------------|---|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/751,301   | Applicant(s)<br>GIORGI ET AL. |  |
|                              | Examiner<br>Tod T. Van Roy  | Art Unit<br>2828              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8-12,14-17 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-7,13,18,20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, see Remarks, filed 08/21/2006, with respect to claims 14-15, 17, and 19 have been fully considered and are persuasive. The rejection of the claims has been withdrawn.

The examiner agrees with the applicant that neither the Molitor nor the Clark references taught the method or means by which the energy storage elements are discharged through the laser diode and cause the current pulse characteristics.

Applicant's arguments filed 08/21/2006 have been fully considered but they are not persuasive.

The applicant has argued that neither Molitor nor the Clark references teach the device claims outlined in claim 1 and its dependent claims. The examiner does not agree with the applicant.

The applicant's arguments are centered on the fact that the cited prior art does not teach the method stated in the claims, or the means for producing the method. The examiner agrees with the applicant in that the function defined in *some* of the claims is not taught by either reference (hence withdrawal of the rejections to the method and means claims), but believes that the device structure is present in the prior art as claimed. Namely, both Molitor and Clark disclose driving circuits in which the components are "coupled" as stated in the device claims. "Coupled" is a limitation not considered to hold much weight without the support of function (i.e., coupled to perform

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a certain function, drive the diode, etc.) and all of the circuit elements can be considered to be electrically coupled. As noted above, when the function of the "coupling" is added to the claims the cited prior art is not valid, but with the vague language currently used both the Molitor and Clark references are found to be valid to one of ordinary skill in the art.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Molitor et al. (US 5089727).

With respect to claims 1 and 9-12, Molitor discloses a pulsed laser driver comprising: a slow voltage discharge stage comprising a first energy storage element (fig.2 #44, .01 uF) having first energy storage capacity at a first voltage magnitude (+25V), a fast voltage stage comprising a second energy storage element (fig.2 #78, 2200 pF) having a second energy storage capacity at a second voltage magnitude (+200V), the second energy storage capacity being less than the first energy storage capacity, and the second voltage magnitude being greater than the first voltage magnitude, a switch controlled current path (fig.2 #62, functions as a switch), and a

laser diode (fig.2 #86) coupled to the first energy storage element and to the second energy storage element through the switch controlled circuit path.

Claims 1 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Clark et al. (US 4400812).

With respect to claims 1 and 9-12, Clark discloses a pulsed laser driver comprising: a slow voltage discharge stage comprising a first energy storage element (fig.1 #21, 1.0 uF) having first energy storage capacity at a first voltage magnitude (3.5V, col.3 lines 35-37), a fast voltage stage comprising a second energy storage element (fig.1 #30, 0.01 uF) having a second energy storage capacity at a second voltage magnitude (+15V), the second energy storage capacity being less than the first energy storage capacity, and the second voltage magnitude being greater than the first voltage magnitude, a switch controlled current path (fig.1 #38, functions as a switch), and a laser diode (fig.2 #86) coupled to the first energy storage element and to the second energy storage element through the switch controlled circuit path.

With respect to claim 8, Clark discloses the switch controlled current path to comprise a first switch having a floating terminal (fig.1 #38) and a second switch having a grounded terminal (fig.1 #39), the floating terminal of the first switch being coupled to a first terminal of the laser diode, and the grounded terminal of the second switch being coupled to a second terminal of the laser diode (coupled through first switch #38).

Claims 14 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Duke et al. (US 3577017).

With respect to claims 14 and 19, Duke discloses a method for driving a laser diode with a current pulse comprising: establishing a first voltage magnitude in a first energy storage element having a first energy storage capacity (fig.1 #C2 0.0015 uF), establishing a second voltage magnitude in a second energy storage element having a second energy storage capacity (fig.1 #C1 0.0002 uF), the second energy storage capacity being smaller than the first energy storage capacity ( $C1 < C2$ ), and the second voltage magnitude being greater than the first voltage magnitude (voltage across C1 would be greater than across C2 due to the voltage drop across series resistor R2), and discharging the first energy storage element and the second energy storage element into a laser diode (fig.1 #10), the discharge of the first energy storage element essentially furnishing a flattop current pulse to the laser diode, and the discharge of the second energy storage element essentially establishing a risetime characteristic of the current pulse (fig.6 inverted pulse to the device, col.1 lines 17-20, as the prior art teaches the claimed circuit schematic in the same configuration the output from the elements would also function in the same manner to drive the diode).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duke.

With respect to claim 15, Duke teaches the driving circuit outlined in the rejection to claim 14 above, including the charge storage devices to be capacitors, but does not teach the use of two separate charge sources. It would have been obvious to one of ordinary skill in the art at the time of the invention to use multiple charge sources, instead of the single source of Duke, in order to allow for a higher degree of control over the amount of voltage applied to each part of the driving circuit.

With respect to claim 17, Duke further teaches the current pulse comprises overshoot in the beginning (fig.6 inverted pulse) attributable to the discharge of the second capacitor (as the prior art teaches the claimed circuit schematic in the same configuration the output from the elements would also function in the same manner to drive the diode).

***Allowable Subject Matter***

Claims 2-7, 13, 18, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2 and 5 are believed to be allowable as the claimed circuit organizations, namely the second terminal of the laser diode being coupled to the second terminals of the capacitors, was not found to be taught in the prior art, or an obvious combination of the prior art.

Claims 3-4 and 6-7 are allowable as they depend from claims 2 and 5.

Claims 13, 18, and 20 are believed to be allowable as the claimed circuit layouts, including the additional fast voltage discharge stage and element value relations to the original two discharge stages, was not found to be taught in the prior art, or to be an obvious combination of the prior art.

***Conclusion***

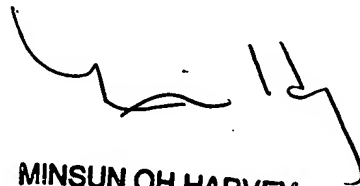
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR



**MINSUN OH HARVEY  
PRIMARY EXAMINER**